


MONTANA *Wildlife*

Spring 1964



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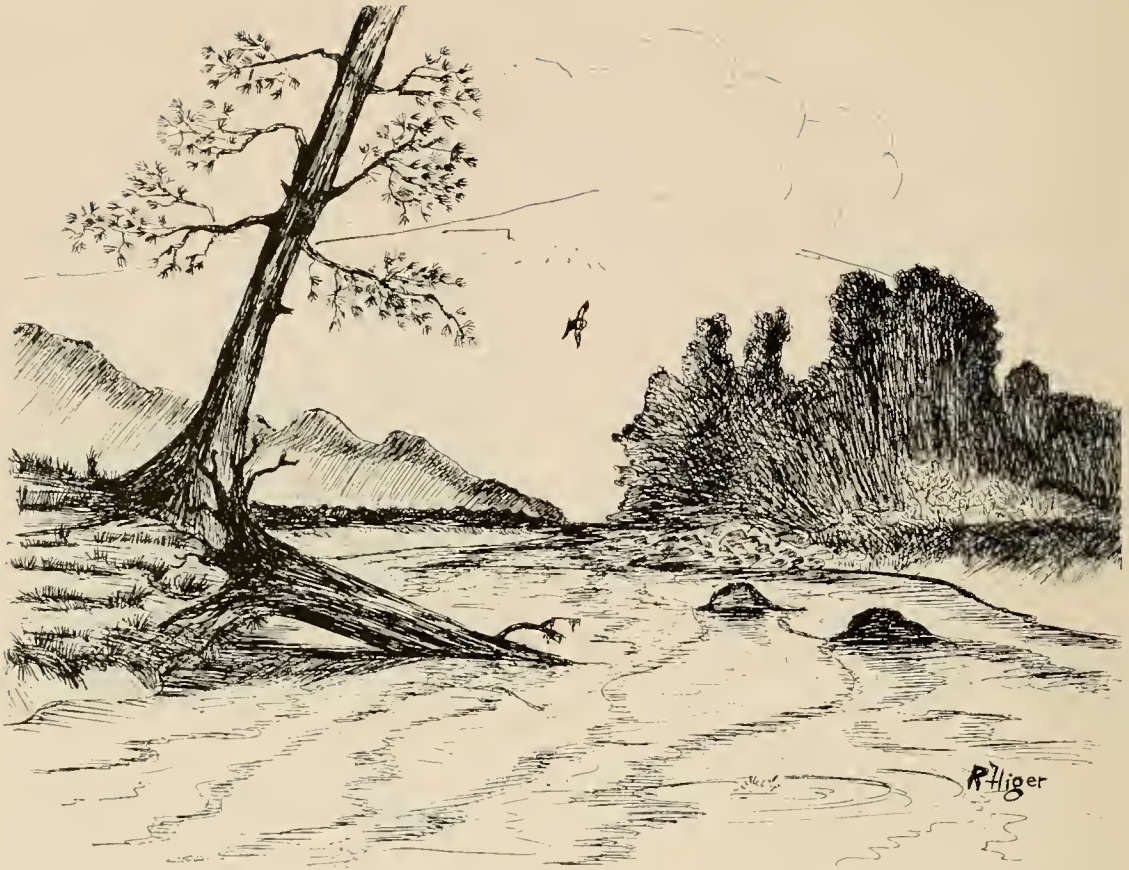
Montana is one of the last strongholds of the fabled grizzly bear. At one time these huge animals were found far out on the Montana prairies and upland plateaus. Today, civilization has forced the remaining grizzlies into high, mountain wilderness areas. Cubs are born during the winter while bears are in hibernation. Unlike black bears, grizzlies mate only every second or third year.

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Editor—Vernon Craig

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STRUGGLE IN THE STREAM

by Perry Nelson, Information-Education Officer

Editor's Note: Nature is an uncompromising master. She has provided certain needs and established ground rules by which her wards must live.

During countless centuries the weeding of unfit animals and plants continues. Hardy species fitted to live under specific conditions survive only where those needs are met. Where other conditions exist, other, better adapted animals are found.

Within a trout stream the rules for existence are rough and tumble. There is no room for the weak, the unwary, or the unadapted. If the physical needs of trout are met, they will persist. If, through the meddlings of man or through other causes, trout stream conditions are changed, then the trout will vanish.

The following article, though imaginary, is not purely fictional. It gives one insight into the relationships between trout and their environment. It depicts the constant competition among fish for food and cover in the relentless struggle for existence.

The night lifted slowly, and revealed the tranquil pool. It was a long curved pool. White foamy water cascaded down a short riffle and made a right angle turn into the head of the pool. At the turn near the white water was a deep overhanging bank bordered by willows. Some of their tangled roots were visible below the over-

hanging bank in the clear water. Several large boulders had fallen into the water from the cliff on the mountain. They lay in the main current below the riffle with only their bald tops showing above the water. What was once a majestic spruce tree had been uprooted by a raging wind-storm. It lay broken and gnarled in the

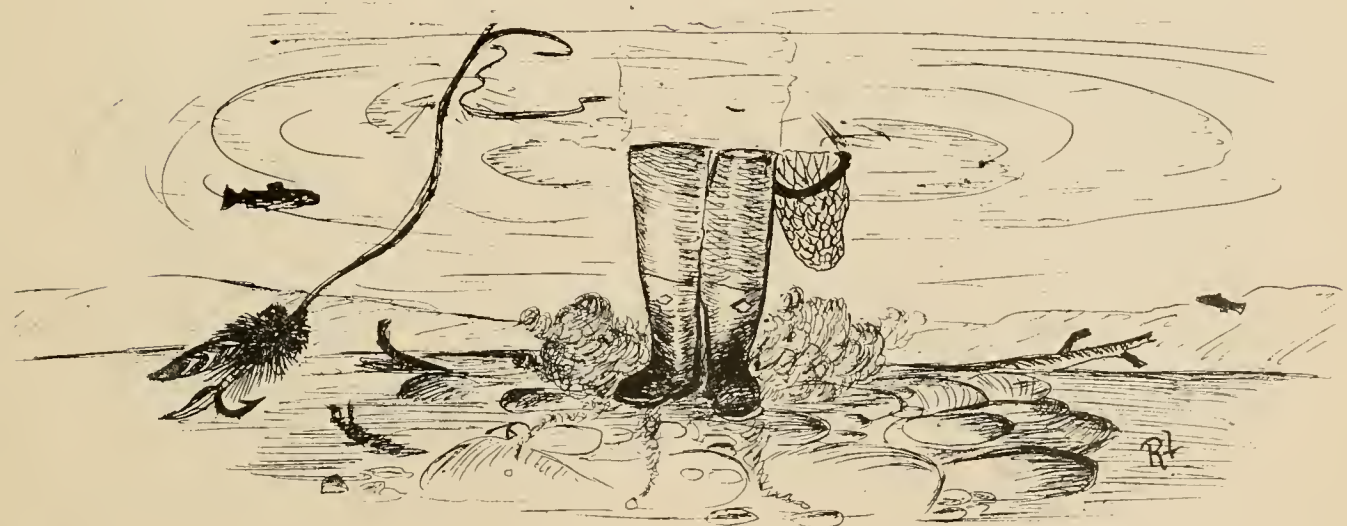
depths of the pool where the water changed color from sky blue to almost black. Downstream the water rippled over a large expanse of smaller boulders and gravel before plunging headlong over another riffle and then into another pool at the bend. The quiet water along the opposite bank gradually shallowed, until it lapped against a sandbar.

Upon the bank where the wild flowers grew, a big buck was standing. His nobby antlers were in velvet. He took a mouthful of flowers, solemnly chewed, and watched the trout feeding in the pool.

The place where the riffle met the pool was a favored spot for feeding. Some smaller trout were lined up, like arrowheads on display, waiting to eat most anything the water might carry to them. Other fish were darting about from shadow to shadow searching for food, or using the shadows for temporary cover while waiting for some hapless insect to float by. The very large trout in the pool seldom exposed themselves, even to the big buck deer. Only occasionally did he see the huge five pound brown trout that shot out like a rocket from beneath the overhanging bank. Most always the big brown trout pounced on and devoured some unsuspecting trout, sucker or chub. Only occasionally would he take one of the larger insects. His behavior was little different than that of his smaller kind, only he was bigger with a need for bigger things.

Later in the morning the big brown trout could feel the familiar vibration made by an approaching fisherman. Big Brown scurried back under his overhanging bank. This bank had been his home cover the last two years. The trout that occupied the overhanging bank before him was last seen chasing a fishy looking object, shiny metal on one side and red and white on the other. From that day on Big Brown had been the number one fish in the pool and occupied the choice place under the overhanging bank. During his time as number one fish he had defended his position against numerous trout that needed his type of cover. Big Brown lived in the pool with nearly fifty other smaller trout from several generations. Many of them were his own descendants. Only two of his poolmates had recently challenged his position as top fish in the pool. They were almost as big as he and were getting too big for their cover.

Since Big Brown had already eaten his fill on two choice suckers and several big mayflies, he decided to stay in his lair until the fisherman passed. In the hectic life of just trying to stay alive in a trout stream he did not consider fishermen very dangerous to his well being even though they were frequent visitors at the pool. Number two fish in the pool, another brown trout, finally noticed the approaching fisherman and moved over under the submerged log. By that time all the fish



were hidden, even Hatch. Number three fish was Hatch, the rainbow trout. He had suddenly arrived in the pool two summers ago with 47 other trout of his kind. They all arrived into the pool through a strange circular object. Big Brown had dined on several himself. They always huddled in a group in the shallow part of the pool, not knowing where or how to seek cover or recognize natural food. As in most trout streams, the cover was already occupied by wild trout.

Presently Big Brown saw the average fisherman. His outline was distorted by the current and reflection of the water, but he was waving a very straight looking tree branch over the pool. A choice mayfly landed on the water at the head of the pool under the bank. He also immediately suspected it a fake and chose to ignore it. Besides it took a lot of effort to go clear across the main current of water flowing into the pool just to inspect such a tiny morsel. Anyway this sort of thing had been going on since last May. He also remembered it had gone on every summer of his life. During this time he had learned to keep his mouth shut when fishermen were around.

Number two brown trout could not see the dancing mayfly from his resting place behind the log until it floated on down below him. Like most trout in the know, Number Two did not like to chase food downstream and besides now it was out in the bright sun and Number Two brown trout was like all other trout—he could not blink his eyes to cut down the glare of the sun. The mayfly floated by Hatch who immediately rose to take a look. After several quick passes and fanning with his tail even Hatch avoided the fly, and returned to his station behind the submerged boulder.

The fly passed by several times in the same manner. None of Big Brown's pool-mates at the head of the pool paid any more attention to the fake fly. On the fifth pass a little brown that had been living at the foot of the pool swam swiftly at the fly, grabbed it in his mouth and was just turning back to his resting area

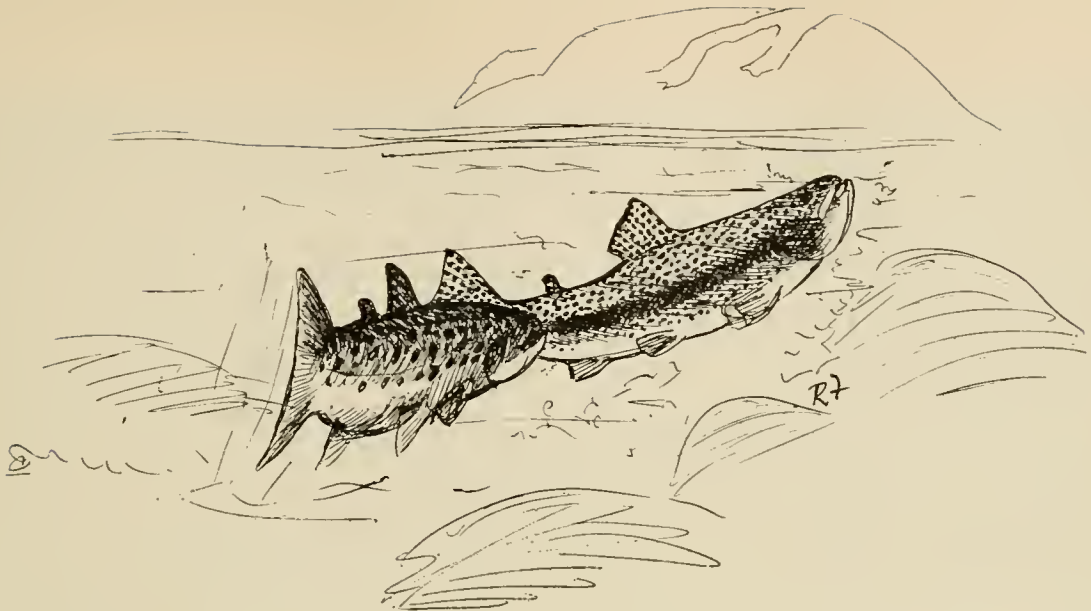
on the bottom when he suddenly disappeared upward.

In a few minutes tranquility returned to the pool and Big Brown contemplated life in his limited surroundings.

Actually, Big Brown had watched fishermen come and go. Many would come to the pool. So far on this day there were twenty. Almost a third of them went away without catching any trout. This had happened before even when the lower pool was filled with Hatch and his kind. Two of the twenty fishermen that had been by the pool were especially dangerous to Big Brown and his kind. They had gone away with almost half of the trout taken from the pool that day.

This taking away by fishermen always puzzled Big Brown. He always figured it would make it easier to find feed, but the cover was almost always reoccupied immediately by some other trout. He had learned from his rough and tumble life in a trout stream that there were always some trout around looking for a home, or looking for a better one because they had outgrown the one they had. No matter how many trout found a place to live in his pool during the summer, by the following spring there were only about 50 fish of various sizes left. This had gone on as long as he could remember. Since he was only a fish he could not know that nature supplied bountiful numbers of small trout by natural reproduction, but the number of trout that grew up were limited by food and cover.

Big Brown's contemplations were suddenly disturbed by some vibrations and grating noises from a downstream direction. They were more ominous sounds than any ever made by fishermen. For several days the noises grew louder until at last he could see what all the noise was about. There was a big yellow machine in the stream. The machine was working toward the next pool at the bend where a big wild rainbow lived. Big Brown had visited this pool several times in search of food. The pool was beyond his normal territory. Unless he was very hungry the big brown trout stayed out of the pool at the bend.



When he went there he would have to fight the big rainbow for the privilege of seeking food in this pool.

All that afternoon the machine methodically removed things from the pool and riffle at the bend that had sheltered both big and little trout for centuries—big boulders, overhanging banks, rock ledges, fallen trees and small rocks. Finally, the deep pool was gone. The water ran in a new straight channel and all was silent except for the running water.

With no further visible threat or sound of danger, Big Brown moved from under his comfortable overhanging bank to the edge of the white foaming water to feed at the head of his pool. He scattered the smaller trout that had been feeding in his favorite spot, and he noticed several strangers in the group. A big black stonefly floated by, and he opened his mouth and ate the squirming insect. Some tiny mayflies drifted past. He let them go to the smaller fish behind him.

Soon another danger was sensed by the big brown trout. He turned and swam uneasily back towards his overhanging bank.

The big rainbow from the bend had escaped the machine and fled upstream before his pool had been destroyed. Now he watched from under the overhanging bank. This was the only cover he could find to shelter his six-pound body.

Big Brown made a savage rush at the unwelcome rainbow who had occupied his

overhanging bank while he was out feeding.

The fight between the two huge fish from separate pools only lasted several seconds. The big brown flung himself at the intruder and they disappeared into the black depth of the pool behind the spruce log.

Only Big Brown returned to the overhanging bank. The uncanny sense that wild things possess told Big Brown that all was not well. He was the last survivor of many fry that first saw the light of day six years ago in the riffle above the pool. About a hundred of his kind had survived the first year in various parts of the trout stream. For the last five years, Big Brown had watched all of his age group disappear. The fishermen had taken ten. The remainder had succumbed to natural enemies and other causes.

During his long life he had been sought by many enemies, including trout of his own kind. There was no mercy hereabouts. In this pool, as in other pools in a trout stream, those trout without good cover were first to die. The strength and vigor that had enabled him to grow and defend the best cover in his pool was now leaving him.

There was no escape from the fate that he and the big rainbow had been dealt by a machine. A shadow floated over the surface of the water. And the night settled slowly and peacefully over the tranquil pool.



Pesticide Patterns and Storm Warnings

From all indications, land management agencies in Montana are discontinuing the use of DDT and other closely allied chemicals meant to control insect and other pests. More recently developed insecticides are taking their place. This move is not being made because new pesticides are more efficient or less expensive. On the contrary, poisons now being substituted for DDT are more costly and their efficiency in controlling insect targets has not been fully determined. The reason is that after many years of use, the hazards involved in application of the chlorinated hydrocarbon chemicals can no longer be ignored nor justified. An enlightened public is making themselves heard.

A disturbing pattern is evident back through the many years that chemicals have been used for insect and weed poisons. The initial stages of the pattern begin when a newly-developed pesticide goes on the market. Most have not been given any long range tests to determine what effects they or their breakdown compounds may

have on plant and animal communities. They are marketed on their effectiveness to immediately kill certain insects or plants. Instructions to prevent misuse obviously dangerous to higher animals, accompany the toxins, but there is little said about their more subtle and indirect effects.

The second stage in the pattern is widespread use accompanied by the slow, tedious researching—the gathering of facts on the less obvious, the latent and possibly most important dangers inherent in the compounds. Gathering facts on things like accumulation of residues through food chains, delayed mortalities, effects upon reproduction and adverse physiological changes in animals requires painstaking effort, sometimes in the face of adverse criticism. Ironically, the jobs of digging out facts is seldom done by the users of the poisons. The task, oddly enough, falls on other agencies, organizations, and persons interested in long range conservation and problems of ecology and health. Despite

The fat of blue grouse collected systematically from a study section in western Montana showed residues of DDT from 1.6 parts per million within nine hours after spraying to 110 parts per million in grouse collected nine months following spraying. Residues in the reproductive tracts of females this spring were over two parts per million with considerably more found in developing eggs. Studies will continue in an effort to determine reproduction and survival of birds in the area.



a recommendation by a Presidential fact-finding board that Government Agencies should take the lead in researching pesticides and making findings known to the public, little has been done.

The third and final stages in the pattern of pesticide use comes when the public has become sufficiently aware of existing problems and dangers that they take a definite stand. This ultimately results in phasing out or limited use of the chemicals under scrutiny.

Heptachlor, aldrin, dieldrin, endrin, toxophene, and finally DDT, are some which can be named off the cuff for having run the cycles. Each has followed the familiar pattern, and when each has been abandoned or limited in use there is another to take its place. The same familiar pattern is started again.

The question comes to mind as to how many of these cycles we can stand. Just how far can we bend nature out of shape with brute force before she bounces back with devastating vengeance? How much can we drench animals, plants, and the soil with toxic, potent chemicals before the plant and animal kingdom suffer irreparably? Certainly, we cannot afford to

run with blissful ignorance through the thousands of formulations that have been concocted to this date. Mounting evidence points out the folly if indiscriminate use of inadequately tested and known harmful pesticides. The storm warnings are out.

It was for these reasons that the Montana Fish and Game Department took a definite stand on the use of pesticides. Since it has been proven that the chlorinated hydrocarbons persist in the environment—that they are accumulated in the tissues of animals, and persist in the soil and plants, and that their effects are damaging to animal life other than target organisms, the commission opposes mass application of these pesticides on public lands. The commission protests the mass use of any other pesticide which has not been adequately tested and has requested that Federal agencies reappraise the use of pesticides in “multiple purpose” programs. In a few words, they have stated that chemicals known to be harmful, and inadequately tested pesticides should not be used over extensive areas of public lands which are intended for use by all public interests. They feel that the storm warnings deserve some recognition.



Nature refuses to stockpile her animals. Left to her own devices the surplus will be eliminated one way or the other.

NATURE'S DEER HARVEST

by Wes Woodgerd, District 6 Supervisor

Wild animals, when not subjected to a stabilizing influence such as annual hunting seasons, are characterized by violent ups and downs in numbers. These changes are quite rapid and usually go unnoticed among the smaller animals such as mice and squirrels. The changes, while much slower, are very noticeable in isolated and unhunted big game animals such as mule deer. Mule deer on Wildhorse Island give a good picture of what happens to deer in this situation.

Wildhorse Island, the largest island in northwest Montana's Flathead Lake, covers about 2,500 acres and is roughly 60 percent grassland and 40 percent timbered slopes. There is almost no level ground on the island. The range condition, evaluated in terms of mule deer needs, is very poor. Browse species have been over-

used to the point that they are almost nonexistent and the conifers have been high-lined as far up as a deer can reach. Fir and pine reproduction has been entirely eliminated. A seed that sprouts and sends up a few green needles is quickly nipped off at ground level.

The grass range shows evidence of recovery from past abuse. Dominant plants on the dry slopes are balsamroot and cheat grass which became established when the native grasses were killed out by overgrazing, but perennial grasses are gaining in vigor on the more favorable sites.

Mule deer share space and forage on the island with horses and a herd of bighorn sheep. Peak numbers occurred in all of these animals about 1954 with an estimated 500 mule deer, 80 horses and 100 bighorns on the island. In the winter of 1955-56,

most of the horses died of starvation or were removed. The mule deer also suffered heavy losses at this time and the bighorns only a minor setback. At the present there are three horses, about 100 bighorns and about 150 mule deer on the island.

Studies of the mule deer on Wildhorse Island have revealed what typically happens to population structures of unhunted deer herds on limited range. Detailed records have been kept since 1959. At this time the adult mule deer were estimated to be at about 200 head. Only 18 fawns (1958 crop) were estimated to be on the island during the spring of 1959. This made an age ratio of nine fawns per hundred adults. A reasonably good fawn crop was born in the spring of 1959 and most of them survived until fall when a count of 54 fawns per hundred adults was obtained. A gradual decline of fawns was noted throughout the winter of 1959-60 until in the spring of 1960 only 13 fawns per hundred adults were on the island.

These counts revealed that recruitment of mule deer on Wildhorse Island amounted to only about 10 percent annually. A herd of deer can survive at this level if mortality among the adults does

A story of desperately hungry animals is written in the high browse line of this juniper.



not exceed 10 percent, but this is seldom the case. The deer population was top-heavy with old animals and particularly with old bucks. The sex ratio of the adults averaged about 115 bucks per hundred does.

An unhealthy situation such as this cannot last for long—something is bound to break—and it did in the winter of 1961-62. A high percentage of the old animals died. In the spring of 1962 the age ratio was 29 fawns per hundred adults. This higher fawn ratio was not caused by a higher-than-usual fawn survival, but rather by an unusually severe die-off of adults which resulted in a rather drastic reduction in the total deer numbers.

In the fall of 1962 there were only nine fawns per hundred adults on Wildhorse Island. To account for this it is necessary to analyze the age structure of the deer. Eighteen month-old mule deer are difficult to separate from the older classes of animals and are therefore classed as adults even though they have not yet reproduced. A high percentage of this age group will lower the ratio of fawns to adults even though the fully adult does produced at a normal rate. This was the situation in the fall of 1962 on Wildhorse Island.

Evidence obtained over the past ten years on Wildhorse Island shows that there has been a drop in total mule deer from 500 to 150, or a 70 percent decline. There has been no hunting. Poaching and movement from the Island are not considered significant. On Wildhorse, management of the herd was left to nature with consequent damage to the range, to the game resource, and with zero benefit to sportsmen.

Properly controlled hunting can help do three important things. First, when animal numbers are kept at an optimum, the range can be managed to provide a maximum amount of forage for game. Secondly, game can be maintained in a thrifty, productive condition in balance with the environment. Third, sportsmen are provided with the maximum amount of recreation that can be developed from the game resource.



Some members of a field trip group discuss deer winter range conditions in Montana's Limestone Hills near Townsend.

Field Trips

A very important part of Fish and Game programs is that of getting information on policy, management, problems, and projects to sportsmen. One of the ways to provide information is through field trips. Field trips are not new to the department, but they are receiving more emphasis. These outings give interested persons a chance to see first hand some of the management projects and problems.

A lot of planning and organization is needed to produce a series of smooth running field trips. The Director's staff, whose responsibilities include overall planning of any department program, first decides upon priority of subject matter to be shown and discussed, the geographic areas to be covered, and organizing procedures. After plans have been firmed up, they are given to the Director for suggestions and approval.

When plans have been approved by the Director, they are then forwarded to district supervisors who see that programs are executed. Then come the arrangements for transportation invitations, publicity, meeting spots, routes of travel and a myriad of other details.

This spring, a dozen trips, involving about 1,000, persons, were taken to deer winter ranges. Late July and early August will find sportsmen on the streams to get a grass-roots rundown on trout streams and some of the problems that face fisheries management.

Tattletale Transmitters

What with a lot of space-born hardware circling the globe, mechanical brains and topless swim suits, it would seem that the modern citizenry should be mentally braced to meet any kind of new-fangled gadgets. T'ain't so! When grouse start sporting radio transmitters it's almost too much. As one old-timer offered, "it's for the birds."

We're talking, of course, about radio equipment that has been developed to tell the whereabouts of wild animals. One of the biggest headaches to any researcher working with animals, and especially small animals, is to be able to follow and find marked specimens.

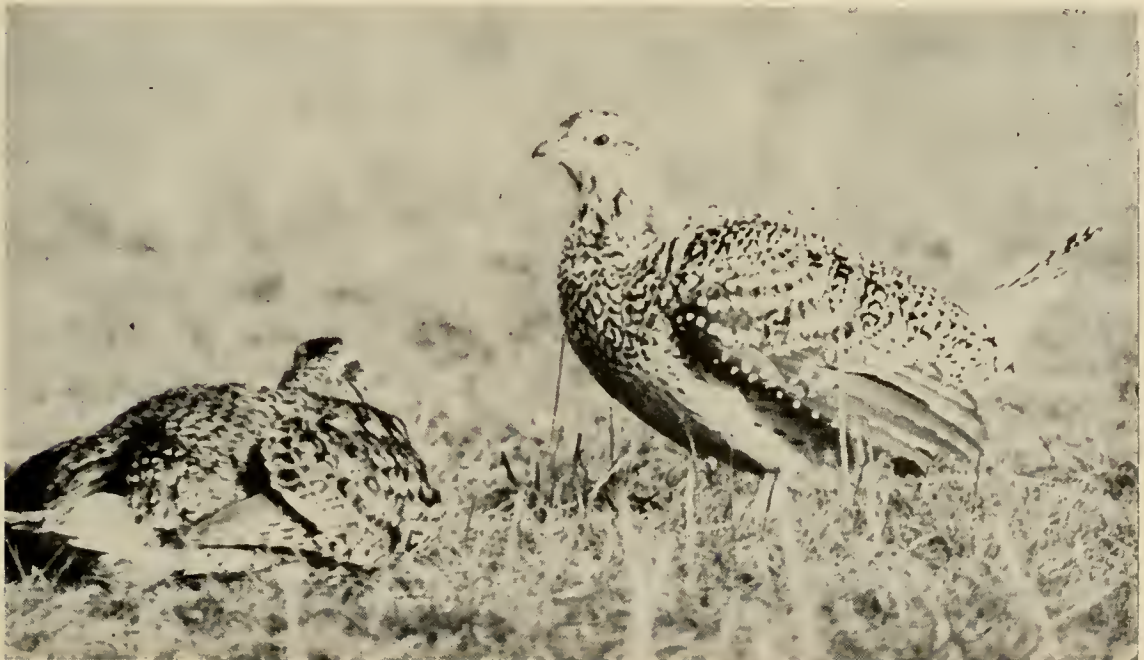
Now science has developed tiny transmitters that can be fitted to birds and mammals. The little device is a real tattletale, and an experienced worker can locate

it with relative ease. It promises to speed up the rate by which we can accumulate knowledge that will benefit management of fish and game.

Radios are being used in Montana to learn more about sharp-tailed grouse. One portion of the program was a cooperative effort between the Montana Fish and Game Department and Denver Wildlife Research Laboratory. The laboratory is a facility of the U. S. Fish and Wildlife Service.

During the program, the relative effects of pesticides on grouse were being tested. Data is not available on the results yet, but accompanying pictures give a preliminary look at the project which employs the most modern equipment. A long range Fish and Game study continues in the Highwood area where instrumented birds have been studied around the season.

Spring, and sharptailed grouse gather on ancestral mating grounds to court and dance away the early morning hours.



RIGHT—A method of capturing sharptailed grouse on their dancing grounds is cannon netting. Nets set the day before or earlier are lofted over birds by miniature cannons.

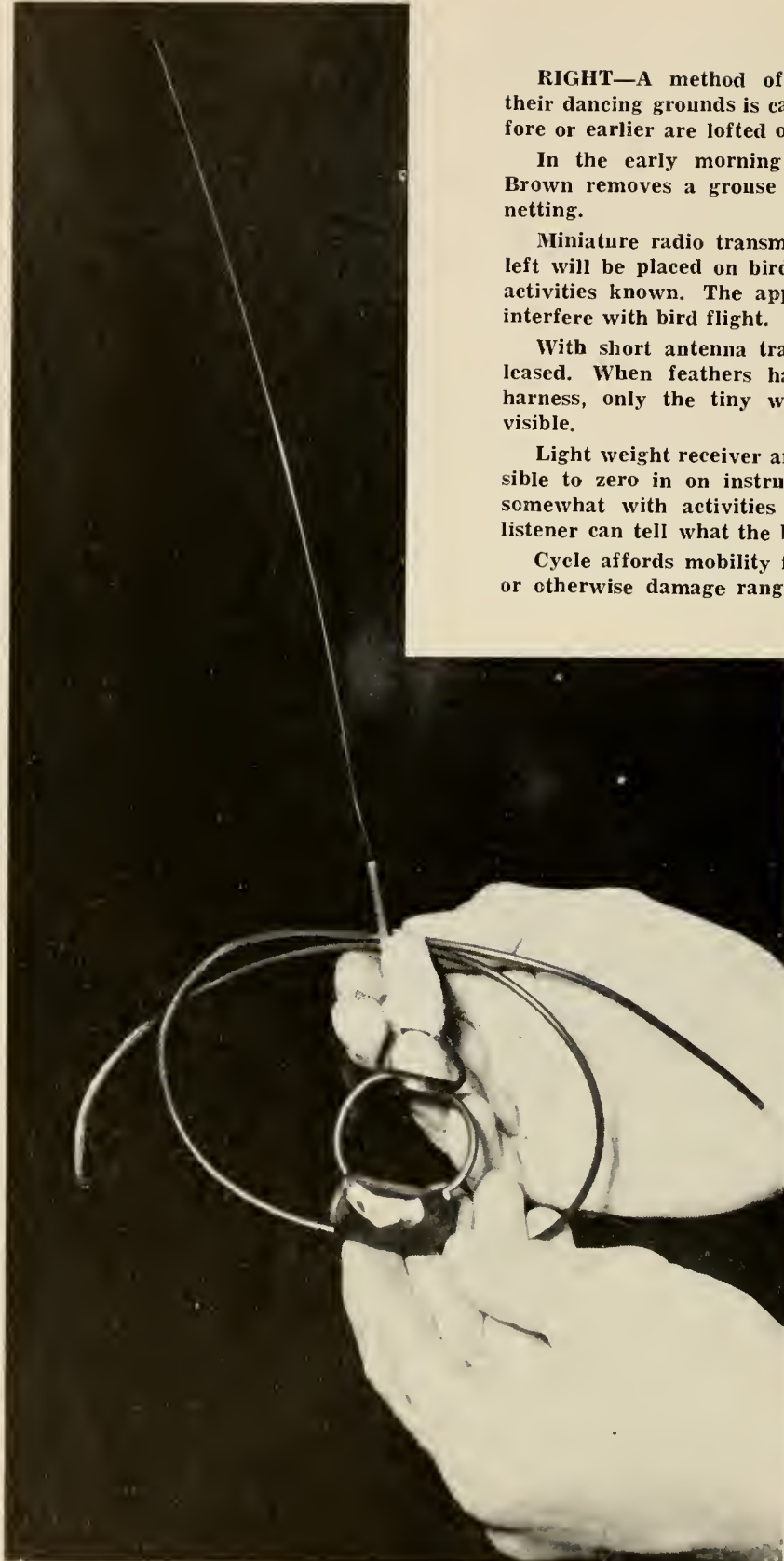
In the early morning darkness, research biologist Bob Brown removes a grouse that has become entangled in the netting.

Miniature radio transmitters like the one pictured at the left will be placed on birds so they can be located and their activities known. The apparatus is very light and does not interfere with bird flight.

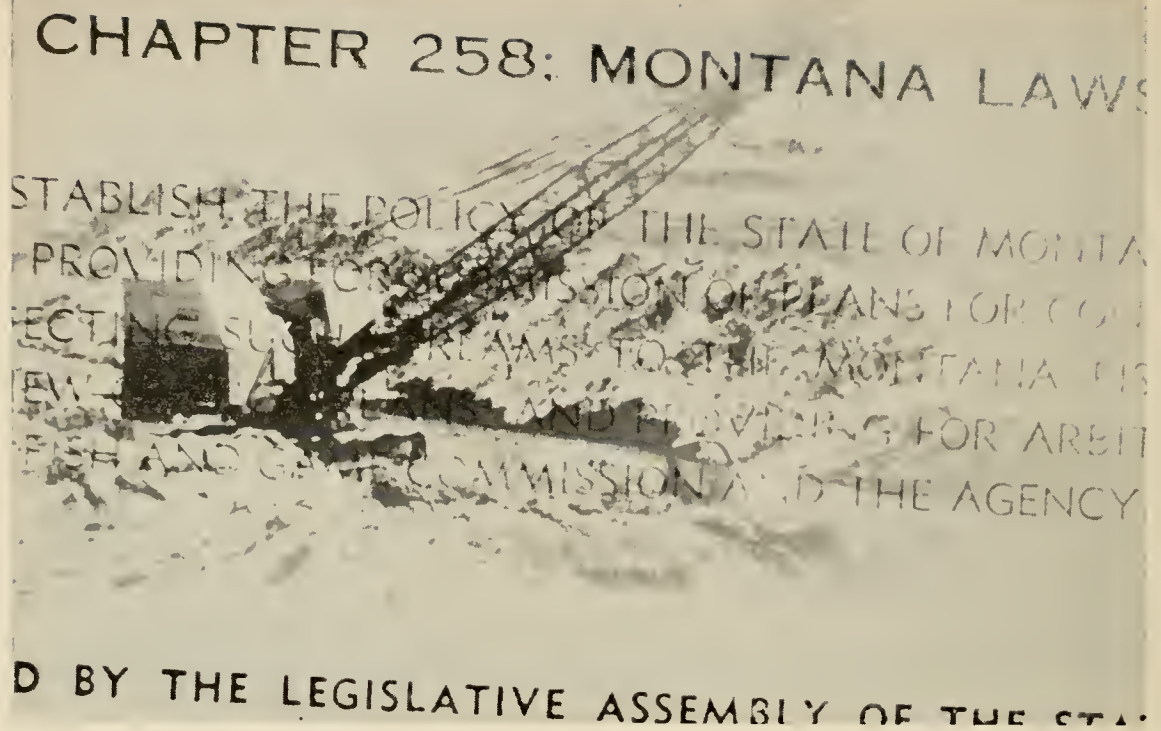
With short antenna trailing, this bird is ready to be released. When feathers have been preened over the radio harness, only the tiny white transmitter and antenna are visible.

Light weight receiver and directional antenna make it possible to zero in on instrumented birds. Radio signals vary somewhat with activities of the birds and an experienced listener can tell what the birds are up to.

Cycle affords mobility for Brown, but does not leave ruts or otherwise damage rangeland.







Proposed Fish and Game Legislation

Stream Alteration Law:

With another legislative session just around the corner, the legislature will again be faced with smoothing out Montana laws. Outmoded laws are abandoned, some of the useable ones are spruced up, and changing conditions may call for new legislation. The Montana Fish and Game Commission has evaluated codes and will propose the following additions, deletions and revisions.

During 1963, a Stream Alteration Bill was placed on Montana's law books. This legislation provided a measure of protection for trout streams and a means of resolving inter-agency differences that result from overlapping responsibilities.

Conflicting overlaps in the responsibilities of governmental agencies are not uncommon. For example, the Fish and Game Commission is obligated to provide a sports fishery. In order to provide sport fishing, it follows that the necessities for fish growth and reproduction must first be present. High on the list of necessities are certain physical qualities of streams—such

things as bank cover, proper distribution of pools and riffles, and bends (meanders) in the stream channel. Conversely, construction and hydraulic projects often change or deteriorate streams so they will no longer support or rear sport fish. This presents a sharp conflict of interests and an obvious overlap of responsibilities.

The legal machinery set up to take care of these problems provides first that preliminary plans for projects that may affect fishing streams must be submitted to the Fish and Game Commission prior to the beginning of construction. The Commission then reviews the plans and advises the applicant as to whether or not the project will adversely affect the fisheries potential of the stream. Alternatives may also be recommended. In the event there is an impasse in reaching a mutual agreement, the whole affair may be turned over to a board of arbitration. The board, composed of a member from each agency and a third person mutually agreed upon by both agencies, hears testimony and renders a binding decision.

The Fish and Game Commission feels that the Stream Alteration Law is a just and workable instrument and will recommend that it be given permanent status.

Twenty-Dollar Deer-Antelope Licenses:

The Commission also recommends that the next legislature continue Commission authority to issue \$20.00 nonresident deer and antelope licenses. Such authority has been provided on a two-year basis and will expire after the 1964 big game season.

Twenty-dollar deer licenses are issued only in limited numbers and in relatively few hunting districts. These districts are ones where deer forage conditions warrant pressure in addition to what residents will bring on the deer. Many deer ranges that were severely damaged by too much use are coming back slowly, or are still slipping because of heavy use, especially in wintering areas where deer concentrate.

Twenty-dollar deer licenses are not being issued in districts which have elk seasons.

Twenty-dollar antelope licenses are issued to nonresidents only after the regular drawings have been held and are issued only in areas where quotas remain unfilled. These have been in the southeastern part of the state where antelope are numerous and the human population sparse.

Residents who did not apply for antelope drawings, or who were not successful in getting a license in the area of their choice, may get one of the surplus antelope licenses for \$1.00.

Authority for the Commission to issue the \$20.00 deer and antelope licenses is essential to adequately harvesting game herds in some parts of Montana.

Add Paddlefish to Game List:

During the past three years, the sport of paddlefishing has been sort of rediscovered and has gained popularity by leaps and bounds. Now that this ancient member of the fish world has become a prime target in Montana's big eastern rivers, the Commission foresees the need for some regulatory measures.

As it now stands, the paddlefish is not listed as a game fish under Montana codes and is, therefore, not within jurisdiction of the Fish and Game Commission.



During the last few years, paddlefishing has gained much popularity in Montana.

Marten:

An amendment to an existing law is proposed which would eliminate tagging, transporting, and reporting restrictions now placed on marten. The proposed amendment would place marten into the same category as other Montana furbearers.

The Commission feels that present restrictions have outlived their need and impose an unnecessary burden upon trappers.

Marten are timber dwelling animals and native to Montana.



Alleviation in Beaver Restrictions:

Years ago when beaver were at a premium and there were no synthetic products to take their place, trappers depleted beaver numbers over much of the northwest. In Montana, certain laws were enacted to aid in a program of bringing this furbearer back to abundance.

The laws and management programs did the job admirably—even too well in some instances. Beaver no longer need the additional protection afforded under some of the earlier laws. In fact, the administration of the required complex permit system and payment of tagging fees by trappers are imposing unnecessary work and expense on both the department and on trappers.

The Commission proposes repeal of a section of the beaver statutes so this animal will have the same status as other furbearers.

Marten and beaver differ from other furbearers in that all others are regulated by the Fish and Game Commission. The proposed amendments for beaver and mar-

ten would place them under Commission regulations and thus provide for simplified, more flexible management.

Use of Fish and Game Lands:

Other legislative provisions recommended by the Commission would give the Fish and Game Commission more definite authority to adequately regulate the recreational use of lands owned or leased by the Commission. Regulations would be enforced in the interest of public health, safety, and protection of public property by regulating camping, picnicking, sanitation, and routes of travel.

Residency More Clearly Defined:

One of the most frequent violations of fish and game laws is that of nonresidents purchasing resident hunting and fishing licenses. An amendment is proposed to one section of fish and game laws so that there will be a more clear definition of who may purchase resident hunting and fishing licenses. This would be a big aid in promoting uniform enforcement throughout the state.

Montana laws that closely parallel those set by the U. S. Coast Guard require certain things of boats, boaters, and in the way of equipment. All motor boats powered by engines of more than ten horsepower are required to be registered by the Montana Board of Equalization. Registered boats must be properly numbered, and the certificate issued by the Board of Equalization must be ready for inspection at any time the boat is in operation.

Some of Montana's waters fall under Coast Guard regulations, and boarding crews to inspect boats may be expected on Canyon Ferry Reservoir, Fort Peck Reservoir, and possibly Flathead Lake. Though state laws closely parallel those of the Coast Guard, there is a new requirement for sound equipment which did not exist at the time Montana statutes and regulations were adopted. Following are requirements for sound-producing devices:

For more information on Boat Safety Laws and Regulations, write The Montana Fish and Game Department, Helena, Montana.

SOUNDING DEVICES AS REQUIRED BY FEDERAL LAW

CLASS A MOTOR BOATS (LESS THAN 16 FEET IN LENGTH)—No sounding device required.

CLASS 1 MOTOR BOATS (16 FEET TO LESS THAN 26 FEET IN LENGTH)—A hand-, mouth-, or power-operated whistle or horn capable of producing a blast of at least 2 seconds' duration and audible for a distance of at least one-half mile.

CLASS 2 MOTOR BOATS (26 FEET TO LESS THAN 40 FEET IN LENGTH)—One hand- or power-operated whistle or horn capable of producing a blast of at least 2 seconds' duration and audible for a distance of one mile.

Bell—one which, when struck, produces a clear, bell-like tone of full round characteristics.

CLASS 3 MOTOR BOATS (40 FEET TO NOT MORE THAN 65 FEET IN LENGTH)—Horn or whistle. Must be power-operated, capable of producing a blast of at least 2 seconds' duration and audible for a distance of at least one mile.

Bell—same as for a Class 2 motor boat.

RECREATION--The Potential And The Problem

by Charles C. Bradley

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This article focuses attention on recreation in Montana and attempts to look at it in its present perspective and in terms of its future potential.

Probably only the western 1/3rd of Montana will attract large numbers of out-of-state vacationists. The eastern 2/3rds could still expand its irrigation and industry without interfering greatly with headwater recreation. To my mind, there is no doubt that the state could profitably

subordinate most other water developments and economic efforts in the western third of the state to that kind of high quality recreation rapidly becoming unavailable elsewhere in the nation and the world. In studying this, we must review not only our strengths but our weaknesses. We do have certain natural advantages, such as something called "western hospitality" and beautiful landscapes. On the other hand, we have a long way to go in the realm of understanding, much less creating the kind of peaceful beauty that these tourists are dreaming about and are hungering for when they come.

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We still decorate our stream banks and village entrances with old car bodies. We Montanans do more than our share to befoul our own picnic areas, campsites, our streams and lakes. We train our engineers to get their jobs done sturdily, speedily and economically but have never tried to teach them (because we lack it ourselves) that sense of fitness which produces a structure of harmony with the landscape. We are especially blind in those engineering structures which impinge upon our waterways. In short, much as we say we love the natural beauty of Montana, as citizens of the state, we do not hesitate to lay it waste, turn it to ugliness, and send it down the drain. This is odd, not so much because we all know Montana beauty is what brings tourist dollars, but more poignantly because this same beauty is the reason most of us have chosen to live here the year round instead of to just vacation here.

We have a long way to go in the tourist game and time is not working for us. However, if we are interested we could do

worse than send a commission to Switzerland for a short course on how man can live in beauty and create beauty in a beautiful land, or how (the under side of the coin) you can "soak the tourist" and yet send him away eagerly planning to spend his next vacation and dollars in your country.

Although the tourist industry is vitally connected with water, the connection is subtle and tenuous. Limitations on the tourist industry probably cannot be stated quantitatively in terms of gallons of water, but it is not at all unlikely that a crude mathematical relationship exists between the number of recreationists in a given area and the miles of attractive shoreline or stream bank in the area. It has been known, and amply shown (ORRRC 1960), that the specific major focus of recreation in the U. S. is upon natural water bodies, and that the quality of the recreational experience is directly and strongly related to the quality of the water and the "naturalness" of the setting. Maybe we should

stress quality rather than number when we talk about recreation.

Tourism, like the American standard of living, is inexorably tied to water but there is a great deal of elasticity in this tie. By eager mismanagement of our water resources we could probably get many more dissatisfied tourists than any other state in the union.

Somewhere between 2% and 10% of Americans, 4 to 20 million, search annually and specifically for the opportunity for contact with nature in varying degrees of primitiveness. Each year the search grows more feverish and more frustrating as urban living is intensified and our dab of remaining wild lands are eroded away under other utilitarian pressures. In abundance of these lands, the State of Montana is both rich and now nearly unique in the nation. With wisdom and planning we could preserve and enhance this advantage. Best of all, by careful management, we could have a non-dwindling resource for which there is an increasing demand—a greater demand than that for our wheat, our Treasure Steaks, or our kilowatts. Long after our minerals are used up and as long as people have money in their pockets and beauty in their souls, they may want to visit Montana, the Treasure state, whose treasure goes well beyond minerals, lumber and food.

A study of the tourist potential of Montana is not basically an economic study. Rather, it is a search into the deepest longings and the richest experiences of man. Recreation in its best meaning refers to the renewal of the body and spirit of man. This is a realm of study we have not bothered about in America but it might strike pay dirt.

In France the tourist is apt to get the impression that the French are interested in his money. In Switzerland he gets the impression that the Swiss are interested in him. Before we make a serious bid for tourists in Montana, it is a fair question and an important one to ask "Which are we interested in?" The honest answer to this will tell us whether we can expect success or mediocrity, whether tourists will

come to Montana or pass through Montana. In a deeper sense, it spells the difference between Montana, a land of enchantment, or Montana, a land of disappointment. In terms of keeping Montana beautiful for those who live here, if we are not really interested in tourists as people we would do much better to discourage them from coming. Much can be lost by simply not caring what tourists want from Montana or what we residents do to our state.

For Montana to work for a recreation ideal will mean, amongst other things:

1. Learning the meaning of "charm" as applied to people and places, then learning how it applies to Montana.

2. Learning to enjoy, care for, and deal skillfully with fairly large numbers of tired, frustrated, and spiritually hungry outlanders.

3. Learning the various ways in which these people may be hidden from each other.

4. Learning how to educate the tourists into the mysteries of living out-of-doors or under semi-primitive conditions and how to cope with the problems of this. The heart of recreation is contrast. How to spend a few days in sharp contrast to highly civilized living without too much discomfort is the delicate problem.

5. Learning by careful study the "carrying capacity" or the "optimum number" for various kinds of recreational space and then restricting the use to that number. This will take a high degree of sensitivity, perceptiveness, and firmness of action.

6. Learning how and what to charge a tourist for his recreation privileges and then how to use these funds to perpetuate and enhance a situation in which a harassed city dweller can find a few days of peace for the renewal of his spirit.

A little of this knowledge is possessed by a few Montanans, notably some "dude ranchers," and some guides and packers, but theirs is a special form of recreation which appeals to a few and can be afforded by even fewer. We should strive for a

variety of recreational opportunities consistent with the general atmosphere desired which capitalizes on the primitive setting of Montana. The dude ranchers and the Montana Wilderness Association have made a start on promotion of good recreation, but they and the rest of us, together have lots to learn if our desire is to corner the tourist market. Anyone can capture a casual passerby, jam him into a crowded motel, and wring a few dollars out of him. The burning question in the tourist trade is "How do we capture his spirit?" The rest will follow. Attractive waterways are the "bait." We have them. What we do to them is of crucial importance — starting now.

We might end this discussion of water resources and recreation by emphasizing again that the key to recreation in Montana is the naturalness of the scene. Regardless of our own in-state recreational desires, the out-of-stater is not looking for marinas and water skiing with their crowds and noise. He can find these in any state in the union including his own. He is not searching for a fluctuating reservoir with its usual muddy banks and construction scars and litter. The New Yorker or the Californian who has his sights on Montana is dreaming of a quiet spot to camp where he can sit in the sun or shade, hear a stream, catch a trout, smell spruce needles and breathe sweet Montana air unflavored by industrial fumes.

This is what the tourist dreams of in Montana—to catch a trout, smell spruce needles, and breathe sweet Montana air unflavored by industrial fumes.



In the future if we cannot reserve for him streams and lakes in their natural setting he simply will not find them anywhere in our nation short of Alaska—a thousand miles farther on. To him Montana will have lost its Treasure, its uniqueness, and will be as dull and disappointing as any other state.

As a broad summary estimate of the problem of wise commitment of Montana's water, we might try to think first in terms of water use priorities and second, in terms of how best to organize these uses so that they interfere as little as possible with each other. A pulp mill can ruin downstream fishing, agricultural withdrawals can rule out downstream industry and trout.

Can zoning, as a planning principle, be applied somehow to a state? Why not? It's our state. If we could zone Montana's land and water, it would appear wise to leave as much as possible of the western 1/3rd of Montana to natural lands, natural bodies of water, and to the primitive or semi-primitive recreation so suited to that area. This will mean, of course, restricted lumbering as well as engineering projects in that area, or viewed in another way the extent of our lumbering and engineering in that area, will restrict the recreation. The choice of how much we have of each will

be up to us, but they are mutually incompatible. More of one means less of the other. The middle 1/3rd of the state could be the main industrial belt with associated dams and power developments to serve these industries. The eastern 1/3rd could use the overflow for intensification of agriculture or, perhaps, the runoff could be sold at a more handsome profit to downstream users.

To do all these things we should not forget the self-education job for Montanans. We need first of all to gather a lot of information on our water particularly as regards how it is being consumed, and how it can be conserved both as to quantity and quality. This will be expensive but vital to the project. It will take experts who have not yet been trained, and training programs not yet devised.

We need to put a tremendous effort into developing a new high level of sensitivity to natural beauty and to learn how to conserve it in the face of all our other activities. This may not be expensive in terms of dollars, but it will take man hours subtracted from activities of lesser value and devoted to caring about Montana and what happens to the quality of living in our beloved state.



PRAIRIE DOG

By VERNON CRAIG

Photos by H. LaCasse

The prairie dog was as much a part of the Great Plains as were bison and antelope. They seem, in fact, to typify the era of saddle leather and gunsmoke. Hardly a western novelist has failed to make some colorful note of the little dog or his quaint "dog town." Prairie dogs are as American as antelope, for like antelope they are native only to our continent. Early explorers sometimes referred to them as "barking squirrels." They are members of the squirrel family and just a casual look would lead one to suspect an oversize ground squirrel with a short tail.

Probably no other members of prairie animals have suffered more the wrath of man. They have been trapped, poisoned, gassed, and shot at since the time of early settlers. Still they persist, and promise to outlast the deep ruts of prairie schooners and stage coaches—and much longer.

These are sociable little rodents and they live close together in "towns" covering from an acre or less to several square miles. It is believed that before white man came to this continent, the prairie dog may have been the most abundant mammal over several large tracts west of the

Missouri River. One colony in South Dakota was estimated to spread over two thousand acres. They were extremely abundant in Montana, Wyoming, and western Kansas.

Colonies, or towns of prairie dogs are a mass of miniature craters. A mound of dirt brought up during excavation of the burrow is piled around the opening and firmly tamped with the dog's nose. The craters afford perches for the dogs and provide a vantage point from which the alert animals can get a better view of the surrounding territory. The mound of earth also provides considerable protection against flooding of the rodent's homes. There is usually a correlary between the age of the burrow and the size of its crater — the longer a hole has been occupied the larger the crater grows. From the crater-like opening, the burrow drops straight down, or nearly so, for several feet. Some have been measured to a depth of 14 feet. At this juncture the tunnels become more

horizontal and accommodate enlarged chambers where the animals apparently rest and rear their young.

Usually, a pair occupies a burrow, excepting when young are being reared. Young are born in late May or during the early part of June. A litter may run to six or eight young, though the average is about four.

Wishtonwish, as the Indians called prairie dogs, are primarily vegetarians, though they are noted to eat grasshoppers. They habitually keep nearly all vegetation cut down close to the ground. Roots as well as the exposed parts of plants are consumed and their home grounds typically become quite barren. On occasions when dogs have denuded an area severely and are forced to travel distances for food, the entire colony may abandon their site and reestablish a town in another area. Colonies will emigrate for other, sometimes unexplainable, reasons.

This little burrowing owl, disturbed from his mid-day nap, glowers discontentedly from the top of an abandoned prairie dog burrow.



As with all wild creatures, the life of a prairie dog is a hazardous one. In addition to man, snakes, badgers, coyotes, eagles, and other predators make life hectic for them. In days past, the black-footed ferret roamed the dog towns mercilessly, killing for food and fun in the typical blood-thirsty manner of the weasel family. The specter of ferrets may well have accounted for many mass emigrations of dog colonies.

A food and housing relationship among prairie dogs, rattlesnakes and burrowing owls accounts for their being commonly seen in the same vicinity. Old-timers sometimes considered that the three animals kept company with each other, and this has led to fanciful stories of comradeship among these elements of the animal world. Actually, burrowing owls use abandoned burrows for their homes. The rattlers, of course, look for a grub-stake of tender young dogs. Adult dogs will kick dirt at a rattlesnake in an attempt to scare it away and reportedly will plug a hole that a snake has entered.

So many secrets of social behavior exist among wild animals, and prairie dogs are not without theirs. We generally associate humans with mob violence, but the little dogs have mobs that become as hysterical, as vengeful and vicious as our own civilized people. For some breach of social behavior or natural laws, for reasons we know nothing of, a mob of dogs will savagely turn upon one of their members and with tooth and claw literally stuff him down a hole and tamp the hole in after him. Accounts of prairie dogs getting the death sentence are not uncommon.

The author has come upon only a few accounts involving human use of prairie dogs. They apparently provided target practice for young Indians and filled camp fire pots. An account in an early edition of Fort Benton's River Press states, "It is a well-known fact that the skin of the common prairie dog, if taken in late spring or during the summer, makes the toughest leather known to leather workers. In the

early days when the old overland stage line was in active business across the continent, the stage drivers used to employ Indians and others to tan the skins of prairie dogs for the purpose of using them for whip points." An account also credits the hides for providing gloves said to be much tougher and superior to buckskin.

When settlers moved into the plains with plows and domestic stock, cultivation, overgrazing, and possibly cutting down of predators made conditions excellent for expansion of prairie dog numbers. Farmers and stockmen both took a real personal interest in what the little dogs were doing. It was estimated that 32 well-fed prairie dogs would consume as much greenery as one sheep. "The glutton dogs," stockmen said, "must go."

In the late 1800's, ranchers and farmers began to mobilize for all-out war on the little animals, and about 1900 the Biological Survey threw their forces into the battle to be followed later by the Forest Service. Earlier attempts at eradication employed dumping of poisoned grain in prairie dog holes. Later the battle employed poisonous gasses. Wads of absorbent material soaked with bisulphide of carbon were dropped into the holes.

The drive to eliminate the dogs was relentless. As late as 1953, 149 farmers in Rosebud county alone used 9,835 pounds of strychnine oats and 54,000 gas wads during one year. Later, 1080 was used in oats.

Complete extermination with known methods was impossible, considering the vast areas to be covered and reproductive potential of prairie dogs. Though they were eliminated over large areas and reduced over their entire range, several colonies still exist in Montana and other states.

The prairie dog occupies a unique niche in the complex animal kingdom. He has his own place among our native fauna. Despite his healthy appetite "Wishton-wish" deserves a chance to survive—at least in limited numbers.

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